REMARKS

Claims 51-75, 88, 89 and 93-143 are pending in this application. By this Response, claims 51, 93, 104, 105, 106, 110, 113, 118, 121, 128, 130, 133, 135, 136, 138, 139, 141 and 143 have been amended.

These amendments add no new matter and are fully supported by the application as filed. In particular, the amendments are supported throughout the application, for example, at page 16.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

In paragraph 2 of the Office Action, the Examiner objects to claim 135 because it contains a typographical error. In response, Applicant has amended the claim as suggested by Examiner, and respectfully requests that the Examiner reconsider and withdraw this objection.

Rejection Under 35 U.S.C. § 102

In paragraphs 3-4 of the Office Action, the Examiner rejects claims 105, 113, 133-134 and 143 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,014,374 ("Paneth"). As discussed below, Applicant respectfully traverses this rejection.

A. The Law of Anticipation and Enabling Prior Art References

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. M.P.E.P. § 2131. The identical invention must be shown in as complete detail as is contained in the claim. *Id.*

However, Applicant submits that independent claims 105, 113, 133 and 143 each have elements that cannot be found, either expressly or inherently, in Paneth. Specifically, each of claims 105, 113, 133 and 143 recite, in part, "an ultra-wideband wireless communication

network." Paneth has no teaching or suggestion of an ultra-wideband wireless communication network.

An ultra-wideband communication system broadcasts a multiplicity of pulses of very short duration to transmit a signal. Ultra-wideband (UWB), or impulse radio employs pulses of electromagnetic energy that are emitted at nanosecond or picosecond intervals (generally tens of picoseconds to a few nanoseconds in duration). For this reason, ultra-wideband is often called "impulse radio." Because the excitation pulse is not a modulated waveform, UWB has also been termed "carrier-free" in that no apparent carrier frequency is evident in the radio frequency (RF) spectrum. That is, the UWB pulses are transmitted without modulation onto a sine wave carrier frequency, in contrast with conventional radio frequency technology. Ultra-wideband requires neither an assigned frequency nor a power amplifier.

The specification of the instant application discusses the unique characteristics of ultra-wideband communication technology on page 16:

> "This method uses short Radio Frequency (RF) pulses to spread the power across a large frequency band and as a consequence reduces the spectral power density as the interference with any device that uses conventional narrowband communication [such as Paneth]. This method of transmitting short pulses is also referred to as Ultra Wide Band technology. This present implementation provides baseband wireless transmission without any carrier."

Ultra-wideband systems are often described as carrier-free systems, to distinguish them from conventional carrier wave systems, such as those disclosed in Paneth. Paneth relates to an RF subscriber telephone system. Paneth provides local-loop telephone service using UHF radio between subscriber stations and a base station (col. 6, lines 4-6). Paneth operates on a common carrier frequency channel pairs within the 454 MHz to 460 MHz band (col. 6, lines 10-12).

Therefore, Paneth teaches a conventional method of transmitting data by modulating and demodulating a carrier frequency.

In contrast, the present invention relates to ultra-wideband technology that does not use a carrier frequency as disclosed in Paneth. Paneth contains no teaching or suggestion of an ultra-wideband communication system, and as discussed above, ultra-wideband technology functions completely differently than conventional carrier wave technology. Therefore, the anticipation rejection of independent claims 105, 113, 133 and 143 is respectfully traversed. Because claim 134 depends from independent claim 133, it is respectfully submitted that the rejection of this claim has been traversed by virtue of its dependency from independent claim 133.

Rejection Under 35 U.S.C. § 103

In paragraphs 5 and 6 of the Office Action, claims 104, 110-112, 118-120, 128-129, 130-132, 135, 136-137, 138, 139-140 and 141-142 stand rejected as unpatentable under 35 U.S.C. § 103(a) over Paneth in view of U.S. Patent 6,031,862 ("Fullerton"). Applicant respectfully traverses this rejection.

A. The Law of Obviousness

In order to establish a prima facie case of obviousness, three basic criteria must be met:

> "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined), must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure." M.P.E.P. § 2142.

The Office Action makes a Section 103 rejection by combining two references. Because a modification to the prior art is required to support this 35 U.S.C. section 103 rejection, an appropriate motivation to modify must be set forth in order to establish a *prima facie* case of obviousness. *See, In re Fritch*, 972 F.2d 1266 (Fed. Cir. 1992).

As discussed above, Paneth relates to an RF subscriber telephone system. Paneth provides local-loop telephone service using UHF radio between subscriber stations and a base station (col. 6, lines 4-6). Paneth operates on a common carrier frequency channel pairs within the 454 MHz to 460 MHz band (col. 6, lines 10-12).

In the Office Action, the Examiner states that "the transmitters in Paneth are structured an configured to operate with baseband wireless technology (see abstract and col. 12, lines 6-11)." The Applicant is unsure of what the Examiner is implying by this statement, or what the Examiner thinks "baseband" means.

The Paneth abstract states "a baseband processor for PSK coding an input signal." And col. 12, lines 6-10 states:

> "The modem receiver demodulator section takes the IF receive signal from the RFU [radio frequency unit] 21 at the receive IF frequency of 20 MHz. This signal is down-converted to baseband, then digitized with an A/D converter function."

The McGraw-Hill Illustrated Telecom Dictionary defines "baseband" as: "The opposite of broadband. Baseband is the transmission of one signal over a media or carrier. Telephone conversations in themselves are baseband." As applied to Paneth, the IF receive signal of 20 MHz is down-converted to baseband.

The McGraw-Hill Illustrated Telecom Dictionary also defines a "baseband modem" as: "A modem that modulates and demodulates a single digital data transmission to and from another modem."

This appears to be the correct construal of "baseband" as used in Paneth, as Paneth is discussing a modem that receives a telephone signal.

Fullerton, on the other hand, relates to an ultra-wideband communication system that communicates information from an impulse radio transmitter to an impulse radio receiver

(Abstract). The impulse radio signals comprise pulses having a 2 GHz center frequency, as shown in FIG. 1A and 1B.

Any mixing and matching of Paneth and Fullerton will result in an inoperable combination. The two references are apples and oranges.

Fullerton employs ultra-wideband technology comprised of 1 nanosecond duration pulses that have a bandwidth of about 2 GHz (FIGS. 1B and 2A).

The Fullerton ultra-wideband pulses are transmitted wirelessly.

Paneth analyzes signals that are transmitted through a telephone line.

A pulse produced by Fullerton has a bandwidth of about 2 gigahertz.

A signal analyzed by Paneth has a bandwidth of about 20 kilohertz (col. 6, line 14).

The system taught in Paneth cannot interface in any way with the system taught in Fullerton, and therefore, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references as suggested by the Examiner.

Therefore, there can be no reasonable expectation of success of a combination of Paneth and Fullerton and thus a *prima facie* case of obviousness does not exist. Therefore, the obviousness rejection of independent claims 104, 110, 118, 128, 130, 135, 136, 138, 139 and 141 is respectfully traversed. Because claims 111, 112, 119-120, 129, 131-132, 137, 140 and 142 depend from the above-listed independent claims, it is respectfully submitted that the rejection of these claims has been traversed by virtue of their dependency from the independent claims. M.P.E.P. § 2143.03.

Rejection Under 35 U.S.C. § 103

In paragraph 7 of the Office Action, claims 51-53, 60, 73-75, 93-103, 106, 114 and 121 stand rejected as unpatentable under 35 U.S.C. § 103(a) over Paneth in view of U.S. Patent 6,449,265 B1 ("Prieto"). Applicant respectfully traverses this rejection.

Amended independent claims 51, 93, 106 and 121 all recite, in part, "an ultra-wideband wireless communication network." As discussed above, Paneth has no teaching or suggestion of an ultra-wideband wireless communication network. Moreover, Prieto does not supply the teachings lacking in Paneth, as Prieto relates to a media access control layer for satellite ATM networks. Prieto contains no teaching or suggestion of an ultra-wideband wireless communication network. Therefore, a *prima facie* case of obviousness does not exist, as the above-amended claims contain elements that are not taught or suggested in either Paneth or Prieto.

Thus, the rejection of independent claims 51, 93, 106 and 121 is respectfully traversed. Because claims 52-53, 60, 73-75, 94-103 and 114 depend from the above-listed independent claims, it is respectfully submitted that the rejection of these claims has been traversed by virtue of their dependency from the independent claims. M.P.E.P. § 2143.03.

Rejection Under 35 U.S.C. § 103

In paragraph 8 of the Office Action, claims 54-56, 57-59, 61-63, 64-66, 67-69, 70-72, 88-89, 107-109, 115-117, 122-124 and 125-127 stand rejected as unpatentable under 35 U.S.C. § 103(a) over Paneth in view of Prieto, and further in view of Fullerton. Applicant respectfully traverses this rejection.

As discussed above, all of the amended independent claims of the instant application have been distinguished from Paneth, Prieto, and Fullerton. Because claims 54-56, 57-59, 61-63, 64-66, 67-69, 70-72, 88-89, 107-109, 115-117, 122-124 and 125-127 all depend from the above-

listed independent claims, it is respectfully submitted that the rejection of these claims has been traversed by virtue of their dependency from the independent claims. M.P.E.P. § 2143.03.

Conclusion

Applicant believes that this Response has addressed all items in the Office Action and now places the application in condition for allowance. Accordingly, favorable reconsideration and allowance of claims 51-75, 88, 89 and 93-143 at an early date is solicited. No fee is believed due with this response. However, the Commissioner is authorized to charge any fee required to our Deposit Account No. 50-2298, in the name of Luce, Forward, Hamilton & Scripps LLP. Should any issues remain unresolved, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

3.6.03

Date

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Below is a marked-up version of the amended claims pursuant to 37 C.F.R. §1.121(c)(3):

51. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and master device structured and configured to manage data transmission between said transceivers, and a Medium Access Control hardware interface comprising a multiplexer/demultiplexer unit and a plurality of slot allocation units, said multiplexer/demultiplexer unit operatively coupled to said plurality of slot allocation units.

93. (Amended) ~~A~~ An ultra-wideband wireless communication network system, comprising:

at least three transceivers, one of which is structured and configured as a master device to manage data transmission between said transceivers;

a transmitter in each said transceiver;

a receiver in each said transceiver; and

a Medium Access Control unit including a Physical layer interface, a multiplexer/demultiplexer unit operatively coupled to said Physical layer interface, a plurality of slot allocation units operatively coupled to said multiplexer/demultiplexer, an interface to higher level protocols operatively coupled to said plurality of slot allocation units.

104. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage data transmission between said master device and said at least two other transceivers and direct data transmission between said at least two other transceivers, wherein said transmitters are structured and configured to emit radio frequency pulses operating with ultra-wide band wireless technology and said receivers are structured and configured to receive said radio pulses.

105. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage data transmission between said master device and said at least two other transceivers and direct data transmission between said at least two other transceivers, wherein said transceivers are structured and configured to transfer data to other transceivers isochronously.

106. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and said master device structured and configured to manage data transmission between said transceivers, wherein each said transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information

for said network system, wherein said transceivers operate according to a Medium Access Control protocol having a time division multiple access frame definition, said protocol structured and configured to operate in aloha mode and time division multiple access mode, said system further comprising a frame definition having a master slot, a command slot, and a plurality of data slots, said master device having a master sync code, a protocol operating in slotted aloha mode and time division multiple access mode, said master device managing said protocol and said data slots in said protocol, and a Medium Access Control hardware interface comprising a multiplexer/demultiplexer unit and a plurality of slot allocation units, said multiplexer/demultiplexer unit operatively coupled to said plurality of slot allocation units.

110. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage direct data transmission between said at least three transceivers, wherein each transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, wherein said transmitters are structured and configured to emit radio frequency pulses operating with ultra-wide band technology and said receivers are structured and configured to receive said radio pulses.

113. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and said master device structured and configured to manage data transmission between said

transceivers, wherein each said transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, said system further comprising a frame definition having a master slot, a command slot, and a plurality of data slots, said master device having a master sync code, a protocol operating in slotted aloha mode and time division multiple access mode, said master device managing said protocol and said data slots in said protocol.

118. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and master device structured and configured to manage data transmission between said transceivers, wherein each said transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, wherein said transceivers operate according to a Medium Access Control protocol having a time division multiple access frame definition, said protocol structured and configured to operate in aloha mode and time division multiple access mode, and further, wherein said transmitters are structured and configured to emit radio frequency pulses operating with ultra-wide band wireless technology and said receivers are structured and configured to receive radio frequency pulses.

121. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and master device structured and configured to manage data transmission between said

transceivers, wherein each said transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, said system further comprising a Medium Access Control hardware interface comprising a multiplexer/demultiplexer unit and a plurality of slot allocation units, said multiplexer/demultiplexer unit operatively coupled to said plurality of slot allocation units.

128. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and master device structured and configured to manage data transmission between said transceivers, wherein each said transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, wherein said transmitters are structured and configured to emit radio frequency pulses operating with baseband wireless technology and said receivers are structured and configured to receive radio frequency pulses, and further wherein said transceivers are structured and configured to transfer data to other said transceivers isochronously.

130. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage direct data transmission between said at least three transceivers, wherein each transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, wherein said transmitters are structured and

configured to emit radio frequency pulses operating with ultra-wide band technology and said receivers are structured and configured to receive said radio pulses.

133. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage direct data transmission between said at least three transceivers, wherein each transceiver further comprises a framing controller, said framing controller having means for generating and maintaining time frame information for said network system, wherein said transceivers are structured and configured to transfer data to other said transceivers isochronously.

135. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and said master device structured and configured to manage data transmission between said transceivers, wherein other transceivers of said at least three transceivers being structured and configured as slave transceivers, each of said slave transceivers further comprises a local clock therein, said master transceiver further comprising a master clock therein, each said local clock synchronized to said master clock, wherein said transceivers operate according to a Medium Access Control protocol structured and configured to operate in aloha mode and time division multiple access mode, said system further comprising a frame definition having a master slot, a command slot, a plurality of data slots, said master device having a master sync code, a protocol operating in slotted aloha mode and time division multiple access mode, said master device managing said protocol and said

data slots in said protocol, wherein said transmitters are structured and configured to emit radio frequency pulses operating with baseband wireless technology and said receivers structured and configured to receive radio frequency pulses, and further wherein said transceivers are structured and configured to transfer data ~~tot~~ to other transceivers isochronously.

136. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and master device structured and configured to manage data transmission between said transceivers, wherein each said stave transceiver further comprises a local clock therein, said master transceiver further comprising a master clock therein, each said local clock synchronized with said master clock, wherein said transceivers operate according to a Medium Access Control protocol having a time division multiple access frame definition, said protocol structured and configured to operate in aloha mode and time division multiple access mode, said system further comprising a frame definition having a master slot, a command slot, and a plurality of data slots, said master having a master sync code, a protocol operating in slotted aloha mode and time division multiple access mode, said master device managing said protocol and said data slots in said protocol, and further, wherein said transmitters are structured and configured to emit radio frequency pulses operating with ultra-wide band wireless technology and said receivers are structured and configured to receive radio frequency pulses.

138. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and

master device structured and configured to manage data transmission between said transceivers, wherein each said slave transceiver further comprises a local clock therein, said master transceiver further comprising a master clock therein, each said local clock synchronized with said master clock, said system further comprising a frame definition having a master slot, a command slot, and a plurality of data slots, said master having a master sync code, a protocol operating in slotted aloha mode and time division multiple access mode, said master device managing said protocol and said data slots in said protocol, wherein said transmitters are structured and configured to emit radio frequency pulses operating with baseband wireless technology and said receivers are structured and configured to receive radio frequency pulses, and further, wherein said transceivers are structured and configured to transfer data to other said transceivers isochronously.

139. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, and master device structured and configured to manage data transmission between said transceivers, wherein each said slave transceiver further comprises a local clock therein, said master transceiver further comprising a master clock therein, each said local clock synchronized with said master clock, said system further comprising a frame definition having a master slot, a command slot, and a plurality of data slots, said master having a master sync code, a protocol operating in slotted aloha mode and time division multiple access mode, said master device managing said protocol and said data slots in said protocol, wherein said transmitters are structured and configured to emit radio frequency pulses operating with ultra-wide band wireless technology and said receivers are structured and configured to receive radio frequency pulses.

141. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage direct data transmission between said at least three transceivers, at least two other transceivers being structured and configured as slave devices, wherein each said slave device further comprises a local clock therein, said master device comprising a master clock therein, each said local clock synchronized with said master clock, wherein said transmitters are structured and configured to emit radio frequency pulses operating with ultra-wide hand technology and said receivers structured and configured to receive said radio pulses.

143. (Amended) ~~A~~ An ultra-wideband wireless communication network system comprising at least three transceivers, each said transceiver having a transmitter and a receiver, one of said transceivers being structured and configured as a master device, said master device structured and configured to manage direct data transmission between said at least three transceivers, at least two other transceivers being structured and configured as slave devices, wherein each said slave device further comprises a local clock therein, said master device comprising a master clock therein, each said local clock synchronized with said master clock, wherein said transmitters are structured and configured to transfer other data to other transceivers isochronously.